

REMARKS

Reconsideration and allowance of the above-referenced application are respectfully requested.

Upon entry of this amendment, claims 1, 2, and 4-22 will remain in the application.

Rejections under 35 USC 102/103

Claims 2 and 4-25 were rejected under 35 U.S.C. 102(e) as allegedly anticipated by or, in the alternative, under 35 U.S.C. 103(a) as allegedly obvious over Matsushima (U.S. 5,917,563).

Applicants respectfully traverse these rejections.

Applicants teach providing a thin film transistor and a capacitor below a region in a pixel in which disclination is likely to occur. Disclination is an alignment disorder of liquid crystal molecules due to surface roughness or a lateral electric field (page 6, lines 18-20). Disclination be caused by a rubbing operation (page 12, lines 8-18 and FIG. 5).

Disclination in a region of a pixel may result in dark lines, thereby making that region inappropriate for display.

The Action contends that disclination areas are inherent in a liquid crystal display device, such as that disclosed in Matsushima. However, Matsushima discloses a so-called "secure" rubbing technique that does not result in alignment disorders

(col. 15, lines 11-14). Accordingly, disclination is clearly not an inherent property or function of the structure disclosed in Matsushima. Accordingly, Applicants submit that the claims are not anticipated by or rendered obvious over Matsushima.

Double patenting rejections

Claims 1, 2, and 4 were rejected under the judicially created doctrine of obviousness-type double patenting as allegedly being unpatentable over claim 1, 10, and 16 of U.S. Patent No. 6,088,070. The Action states that, "Although the conflicting claims are not identical, they are not patentably distinct from each other because the stated intended use does not result in any structural difference." The claims have been amended to recite specific structures in which the recited device is included. Applicants submit that the claims are patentably distinct from those in U.S. Patent No. 6,088,070.

Attached is a marked-up version of the changes being made by the current amendment.

Applicant asks that all claims be allowed. Please apply any charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

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Kenyon S. Jenckes
Reg. No. 41,873

PTO Customer No. 20985
Fish & Richardson P.C.
4350 La Jolla Village Drive, Suite 500
San Diego, California 92122
Telephone: (858) 678-5070
Facsimile: (858) 678-5099

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Version with markings to show changes made

In the claims:

Claim 23-25 have been cancelled.

Claim 1, 2, and 4 have been amended as follows:

1. (Amended) An electronic apparatus including an active matrix device, said device comprising:

a gate line formed over a substrate;

a source line formed over said gate line;

a switching element including a thin film transistor formed at an intersection between said gate line and said source line wherein said source line is electrically connected to a source of said switching element;

a metal interconnection electrically connected to a drain of said switching element wherein said metal interconnection is positioned in a same layer as said source line;

an interlayer insulating film comprising lower and upper insulating layers formed over said source line, said metal interconnection and said switching element, wherein said upper insulating layer has an opening to expose said lower insulating layer in said opening;

a light blocking conductive film formed on said interlayer insulating film, further comprising a capacitor formed at said opening between said light blocking conductive film and said metal interconnection with said lower insulating layer interposed therebetween; and

a pixel electrode electrically connected to said metal interconnection and located over said light blocking conductive film,

wherein said switching element and said capacitor are provided in a region of a pixel where disclination is likely to occur,

wherein said [active matrix device is used for an] electronic apparatus is selected from a video camera, a still camera, a projector, a projection TV, a head-mounted display, a car navigation apparatus, a personal computer and a portable information terminal.

2. (Amended) An electronic apparatus including an active matrix device, said device comprising:

a gate line formed over a substrate;
a source line formed over said gate line;
a switching element including a thin film transistor formed at an intersection between said gate line and said source line

wherein said source line is electrically connected to a source of said switching element;

a metal interconnection electrically connected to a drain of said switching element;

an interlayer insulating film formed over said source line, said metal interconnection and said switching element;

a light blocking conductive film formed on said interlayer insulating film;

a capacitor formed between said metal interconnection and said light blocking conductive film with said interlayer insulating film interposed therebetween,

a pixel electrode electrically connected to said metal interconnection and located over said light blocking conductive film,

wherein said capacitor covers at least an active region of said switching element, said capacitor and said switching element provided below a region where disclination is likely to occur, and

wherein said [active matrix device is used for an] electronic apparatus is selected from a video camera, a still camera, a projector, a projection TV, a head-mounted display, a car navigation apparatus, a personal computer and a portable information terminal.

4. (Amended) An electronic apparatus including an active matrix device, said device comprising:

a plurality of gate lines extending in parallel and formed over a substrate;

a plurality of source lines extending orthogonally to said plurality of gate lines and formed over the substrate;

a plurality of pixels surrounded by said plurality of gate lines and said plurality of source lines;

at least one thin film transistor formed in each of said plurality of pixels;

a pixel electrode formed over said thin film transistor in each of said plurality of pixels wherein said pixel electrode is electrically connected to the associated thin film transistor through a metal interconnect;

an orientation film formed on said pixel electrode wherein a surface of the orientation film has been rubbed in one direction from one corner of the pixel;

a black matrix formed above said thin film transistor and below said pixel electrode, said black matrix comprising a light shielding conductive film; and

an auxiliary capacitor formed between said black matrix and said metal interconnect in each of said pixels,

wherein said auxiliary capacitor is positioned so as to cover a part of said pixel including said one corner thereof, and

wherein said [active matrix device is used for an] electronic apparatus is selected from a video camera, a still camera, a projector, a projection TV, a head-mounted display, a car navigation apparatus, a personal computer and a portable information terminal.